

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A polymerization process comprising:
_____ achieving a desired polymerization temperature of a reaction mixture in a
reactor;
_____ dosing at least one peroxide over a period of time to the reaction mixture at the
desired polymerization temperature, the peroxide having wherein at least one peroxide, with a
half life in between 1 hour and 0.001 hour at the desired polymerization temperature, ~~at the~~
~~moment of dosing, is dosed to the reaction mixture at the polymerization temperature and~~
wherein at least during part of the period in which the peroxide is dosed;
_____ i) the cooling means of the reactor are kept at essentially maximum cooling
capacity; and
_____ ii) the amount of initiator that is dosed is actively controlled by a temperature
controller such that the temperature of the reaction mixture is achieved and maintained within
0.3°C of the desired polymerization temperature, is achieved and maintained within 0.3°C of
~~said polymerization temperature.~~
2. (Currently Amended) The polymerization process of claim 1 wherein the
~~polymerization temperature~~ temperature of the reaction mixture is maintained within 0.2°C;
~~preferably within 0.1°C, of said the desired~~ polymerization temperature.
3. (Currently Amended) The polymerization process of claim 1 wherein the
temperature controller controls the temperature of the reaction mixture by monitoring the
temperature of the reaction mixture and/or the pressure of the any gas phase in the
~~polymerization~~ reactor during the polymerization reaction, while at the same time adjusting
the dosing rate of the initiator to the reaction mixture.

4. (Currently Amended) The polymerization process of claim 1 wherein the polymer obtained has a K-value within 0.3 units of the desired K-value, ~~preferably within 0.2 units of the desired K-value.~~

5. (Previously Presented) The polymerization process of claim 1 wherein the temperature is controlled by a temperature controller selected from the group consisting of a PID controller, a PI controller, a PD controller, and a fuzzy logic controller.

6. (Currently Amended) A polymerization process according to claim 5 wherein the controller is a PID controller using a proportional band, ~~characterized in that~~ and the proportional band of the PID controller is in the range of from 0.6% to 2.5%.

7. (Currently Amended) A polymerization process according to claim 6 wherein ~~the~~ temperature sensing means are linked to the proportional and integral input signals of the PID controller and wherein reactor pressure sensing means are linked to ~~the~~ a derivative function of the PID controller during at least part of the period in which the peroxide is dosed.

8. (Previously Presented) A polymerization process according to claim 1 wherein vinyl chloride is polymerized, optionally together with other monomers.

9. (Previously Presented) A polymerization process according to claim 1 wherein the polymerization process is a suspension polymerization process.

10. (New) The polymerization process of claim 1, wherein the temperature of the reaction mixture is maintained within 0.1°C of the desired polymerization temperature.

11. (New) The polymerization process of claim 1, wherein the polymer obtained has a K-value within 0.2 units of the desired K-value.